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Joint
Advanced
Warfighting
Program

Red Teaming: Shaping the Transformation Process

Annotated Briefing

John F. Sandoz

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Shaping the Transformation Process

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New joint warfighting concepts and capabilities need to be robust in the face of the counters and initiatives of potential future adversaries. This requires going beyond merely scripting the opponent's behavior or pitting today's threat against our presumed future capabilities. To do this, a systematic and vigorous Red Team program is needed.

A previous JAWP paper, Red Teaming: A Means for Transformation, drew lessons from Joint Forces Command's first joint experiment to offer a vision of the roles for Red Teams in the larger transformation process. That paper made the case that Red Teams are needed throughout concept development and experimentation; and furthermore, that Red Team activities should be embedded in a disciplined process of interaction between the Red Team and the concept developers and program advocates. This annotated briefing extends the earlier work by offering more specifics about the design and organization of Red Team processes to support joint concept development and experimentation.

A major point of the paper is that the involvement of senior-level officials in the Department of Defense is needed to create and sustain a Red Team effort that exhibits both the requisite independence from, and interaction with, the concept developers and program advocates. The Under Secretary of Defense for Acquisition, Technology and Logistics recently established the DoD Adaptive Red Team (DART) as a prototype similar to the paper's proposed Red Team.

I invite your comments and feedback, which should be directed to:

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Recent and Forthcoming Publications of The Joint Advanced Warfighting Program

Experimentation

Lessons Learned: Commanding a Digital Brigade Combat Team, Rick Lynch, IDA Paper P-3616, June 2001.

US Army and US Marine Corps Interoperability: A Bottom-up Series of Experiments, Rick Lynch, Tom O'Leary, Tom Clemons, and Doug Henderson, IDA Paper P-3537, November 2000.

Experimentation in the Period Between the Two World Wars: Lessons for the Twenty-First Century, Williamson Murray, IDA Document D-2502, October 2000.

Lessons Learned from the First Joint Experiment (J9901), Larry D. Budge and John Fricas, IDA Document D-2496, October 2000.

The Joint Experiment J9901: Attack Operations Against Critical Mobile Targets, Joint Advanced Warfighting Program, September 29, 2000. Prepared for the US Joint Forces Command.

Joint Warfighting Experimentation: Ingredients for Success, James H. Kurtz, IDA Document D-2437, September 2000.

Framework for Joint Experimentation—Transformation's Enabler, Karl Lowe, IDA Document D-2280, January 1999.

Joint Concept Development

Strategic Maneuver, Joseph Sokol, forthcoming, 2001.

A Historical Perspective on Effects-Based Operations, Williamson Murray, with Thomas O'Leary, Joel Resnick, Dennis Gleeson, and Gwen Linde, IDA Paper P-3606, forthcoming, 2001.

Taking the Revolution in Military Affairs Downtown: New Approaches to Urban Operations, William J. Hurley, IDA Paper P-3593, forthcoming, August 2001.

Future Joint Force Headquarters, Scott Schisser, IDA Paper P-3601, forthcoming, 2001.

Joint Strike Force Operational Concept, Rick Lynch, David Bolanos, Thomas Clemons, Kathleen Echiverri, Dennis J. Gleeson, Jr., Doug Henderson, Aleksandra Rohde, Scott Schisser, IDA Paper P-3578, forthcoming, July 2001.

New Perspectives on Effects-Based Operations: Annotated Briefing, Dennis J. Gleeson, Gwen Linde, Kathleen McGrath, Adrienne Murphy, Williamson Murray, Tom O'Leary, Joel B. Resnick, IDA Document D-2583, June 2001.

Stimulating Breakthrough Change: An Operational Concept for a Future Joint Force, Karl H. Lowe, IDA Paper P-3602, forthcoming, 2001.

War and Urban Terrain in the Twenty-First Century, Williamson Murray, IDA Paper P-3568, November 2000.

Military Operations in Urban Terrain: A Survey of Journal Articles, D. Robert Worley, Alec Wahlman, and Dennis Gleeson, Jr., IDA Document D-2521, October 2000.

Transformation Process

Red Teaming: Shaping the Transformation Process: Annotated Briefing, John Sandoz, IDA Document D-2590, June 2001.

Thinking About Innovation, Williamson Murray, IDA Paper P-3576, June 2001.

Red Teaming: A Means for Transformation, John F. Sandoz, IDA Paper P-3580, January 2001.

Developing Metrics for DoD's Transformation, Joel B. Resnick, IDA Document D-2528, October 2000.

Seminars and Workshop

Workshop on Advanced Technologies for Urban Operations, November 14-15, 2000: Summary of Proceedings, Hurley, William J., IDA Document D-2574, forthcoming, June 2001.

Joint Advanced Warfare Seminar, James H. Kurtz, Daniel E. Moore, and Joel B. Resnick, IDA Document D-2346, July 1999.

Workshop on Advanced Technologies and Future Joint Warfighting, April 8–10, 1999: Summary of Proceedings, William J. Hurley, Phillip Gould, and Nancy P. Licato, IDA Document D-2343, May 1999.

General

FY2000 End of Year Report: Volumes I, II, and III, Theodore S. Gold et al., IDA Paper P-3571, November 2000.

Preface

This document was prepared for the Office of the Under Secretary of Defense for Acquisition, Technology, and Logistics under the task order Joint Advanced Warfighting Programs (JAWP). It addresses the task order objective of generating advanced joint operational concepts and joint experimentation to assist the Department of Defense in attaining the objectives of Joint Vision 2020. Members of the JAWP contributed to the ideas and review of this report.

The JAWP was established at the Institute for Defense Analyses (IDA) by the Office of the Secretary of Defense and the Joint Staff to serve as a catalyst for stimulating innovation and breakthrough change. The JAWP Team is composed of military personnel on joint assignments from each Service as well as civilian analysts from IDA. The JAWP is located principally in Alexandria, Virginia, and includes an office in Norfolk, Virginia, that facilitates coordination with the United States Joint Forces Command.

This document does not necessarily reflect the views of IDA or the sponsors of the JAWP. Our intent is to stimulate ideas, discussion, and, ultimately, the discovery and innovation that must fuel successful transformation.

Contents

Red Teaming:
Shaping The Transformation Process

June 19, 2001

This briefing was prepared by the Joint Advanced Warfighting Program (JAWP) at the Institute for Defense Analyses for the purpose of exploring how red teaming might perform a useful role in transforming US military capabilities to meet future security challenges.

Since the end of the Cold War, the United States has recognized the need to transform its military forces to meet the security challenges of a changing world. Joint concept development is ongoing at a number of levels within the Department of Defense (DoD), and joint experimentation is a means to explore and test innovative new concepts.

The process of developing and experimenting with new concepts includes characterizing future threats. Results of experiments should influence decisions about doctrine, organization, training, leader development, as well as technology and material. In this regard, DoD's success in effectively transforming its military forces may hinge on the robustness of experiments that pit new concepts against tomorrow's adversaries.

Unless concept development and joint experimentation consider the adaptive nature of those adversaries, the goal of transformation may not be realized.

Replicating adaptive adversaries is the business of red teaming. In its first joint experiment, J9901: Attack Operations Against Critical Mobile Targets, a JAWP team exploited the value of adaptive adversary play in human-in-the-loop (HITL) simulations.

A recent JAWP paper described the Red Team process used in J9901[1] and concluded that the role of red teaming in transformation should be expanded. This briefing will examine the issues and alternatives for accomplishing that end.

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[1] John F. Sandoz, *Red Teaming: A Means to Military Transformation,* IDA Paper P-3580, Institute for Defense Analyses, Alexandria, Virginia, January 2001.

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Overview

- **Spectrum of Red Teams and what they do**

- Challenges and attributes of a "World Class" Red Team

- Issues and alternatives for establishing a Red Team

- Next step: Establish a prototype Red Team

Most people have a sense of what a Red Team is and does. This briefing will first examine the spectrum of Red Teams and how different forms of red teaming contribute to the transformation process.

Second, it will consider challenges to effective red teaming. Human nature and the prevailing military culture make it difficult to push new ideas to their breaking point. "Experiments" frequently become little more than demonstrations of what the prevailing military culture values. A strong Red Team is needed to help expose weaknesses and foster robustness in proposed concepts before next-generation capabilities are developed and fielded. The briefing will describe some desirable attributes for a "World Class" Red Team

Third, the briefing will consider issues for establishing an effective Red Team and a range of alternatives for setting one up. Finally, it will propose a concept for a prototype Red Team.

Many Shades of Red

"Red Teaming" Takes Several Forms

What If-ers | Technical Peer Reviews | **Surrogate Adversaries** *(At Strategic, Operational, and Tactical Levels)* | System Red Teams

Our focus
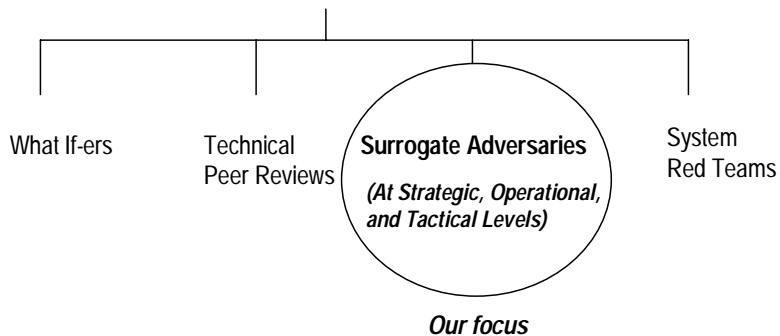
Red teaming is a term used for a class of management tools intended to challenge projects and activities, thereby reducing the risks of over-reliance on "in-house" expertise and perspective. It is used to question conventional wisdom, challenge favorite ideas, confront technical issues, expose flaws in our understanding, and discover how adaptive adversaries might counter our concepts and capabilities. Forms of red teaming include the following.

What If-ers look for unexpected scenarios or unintended consequences of particular concepts or approaches to problems. This style of red teaming is often informal and involves free-flowing dialogue between proponents for an idea and those who play devil's advocate.

Technical peer reviews search for flaws in the technology or engineering design of capabilities. They focus on what might go wrong within a system, although they may also consider impacts of changes in the external environment. A peer review usually involves individuals from the same or related science and engineering disciplines.

Surrogate adversaries include a range of groups with diverse technical, operational, and cultural backgrounds who oppose US strategies, concepts, and capabilities in creative ways. This form of red teaming expands understanding of the future security environment by challenging our thinking at the strategic level, our concepts at the operational level, and the application of those concepts in HITL experiments such as J9901. At the tactical field level, surrogate opposing forces can provide our combat forces with a "first battle experience" before they encounter a real adversary. At each level, variants of Red Teams can be used to emulate different adversaries. In a manner analogous to the Team A–Team B approach to threat analysis, a range of surrogate adversaries could be used to challenge future concepts under different regional scenarios.

System Red Teams explore counters an adversary might develop through innovative uses of technology. They are similar to surrogate adversaries but focus on technical innovations rather than cultural considerations. Identifying low cost and effective counters is one means of discovering real

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vulnerabilities in future systems. One example is the Ballistic Missile Defense Organization Countermeasures Hands-On Program (BMDO CHOP, or the Chop Shop) at Kirtland Air Force Base, New Mexico. This project uses young officers with recent technical degrees to serve as a "foreign design team" to devise, build, and test inexpensive countermeasures, working only from open source information and commercially available components.

While the different forms of red teaming are useful and necessary in their particular applications, the remainder of this briefing will focus on the roles surrogate adversary Red Teams could have in the transformation process.

Defining the Adaptive Threat

	Nearer term	Longer term
Traditional Threat Assessment	Intel Community estimates based on <u>evidentiary threats</u>	Extrapolating <u>evidentiary threats</u> into the future
Assessment of Adaptive Threat	Asymmetric adaptation to US capabilities within <u>current</u> technologies	Adaptation to US strategies using <u>future</u> technologies

The Focus of This Paper
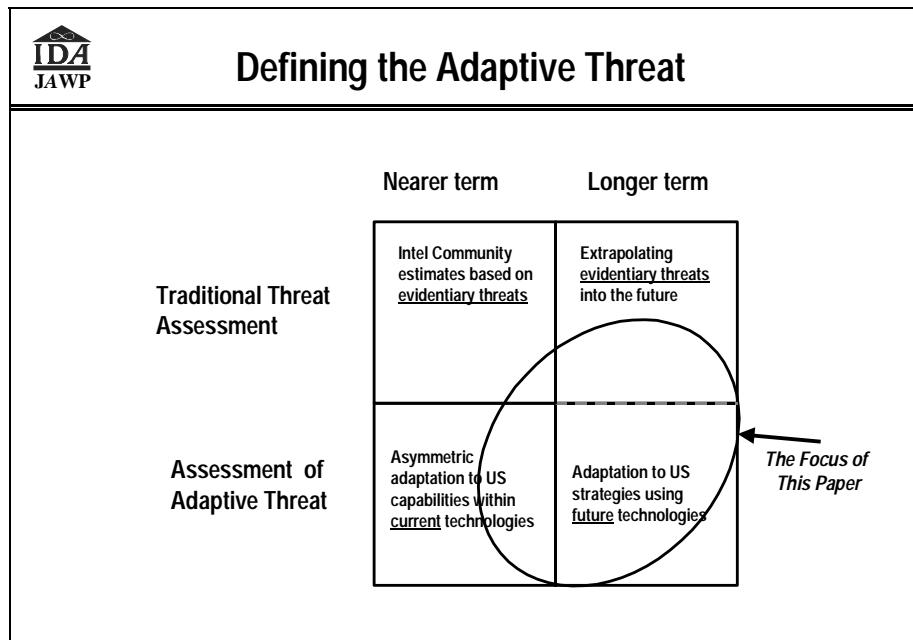
Understanding future threats is a persistent challenge in the transformation process. During the Cold War, intelligence community estimates of future threats were primarily based on evidence of capabilities and intentions, or the "evidentiary threat."

This focus, which influenced the development of our systems and capabilities, was built over decades on a base of knowledge about our major adversary's requirements, development, and acquisition processes. Today's—and tomorrow's—potential adversaries include a changing group of state and non-state actors, each with growing access to technologies with military applications and the ability to change more rapidly.

Understanding the future security environment requires not only an understanding of the evidence-based threats, but also how potential adversaries might adapt to our capabilities. Preparing for the uncertain future requires more emphasis on assessing future threats based on what is technically possible (**the technologically feasible threat**) and how particular adversaries might react or adapt asymmetrically to US military capabilities (**the adaptive threat**).

Red Teams can be a resource to the threat assessment process by helping expand our understanding of how future adversaries might oppose US military operations. More than precisely modeling future threats, red teaming attempts to emulate the adaptive character of an enemy.

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Red Teams Help Find the "Sweet Spot"— Cheap but Effective Counters to Our Concepts
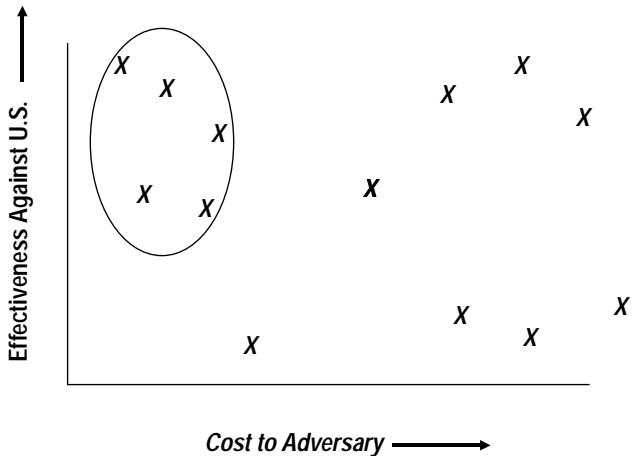
By emulating the adaptive character of an enemy, Red Teams help to focus on those threats or counters that an adversary is most likely to employ. In this graphic, the "Xs" represent possible counters to US capabilities in terms of their effectiveness versus their cost to implement. During J9901, the Red Team developed a range of counters that were evaluated in a similar manner, promoting greater understanding about which issues the experiment should explore.

Spider Diagrams: The Webs Bad Guys Weave

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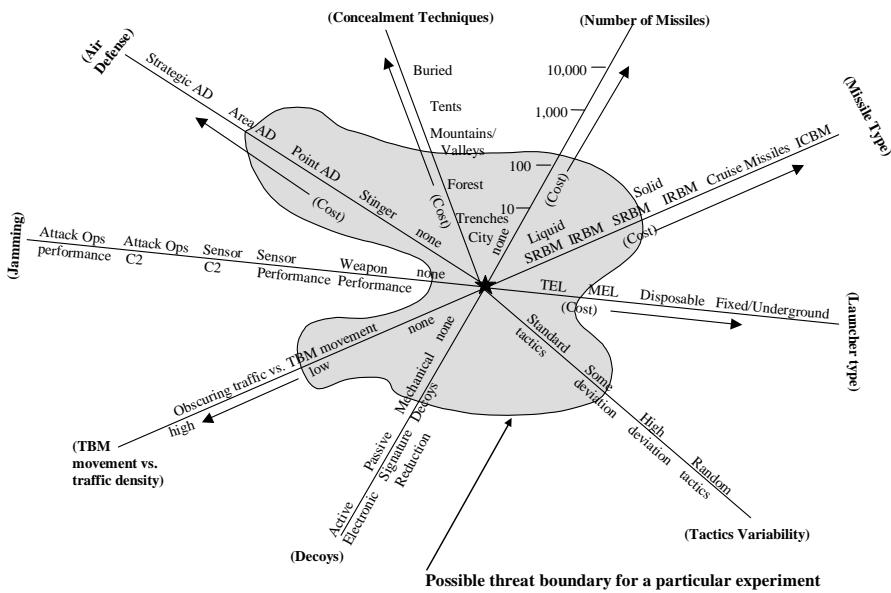
One method of categorizing adaptive threats or counters to US capabilities is the spider diagram. Used by the Red Team during J9901, this diagram illustrates the different approaches and investment strategies an adversary might use to enhance survivability of his theater ballistic missile force against US attack operations. The progressive nature of the countermeasures shown on each leg can be considered both in terms of cost to Red and effectiveness against Blue. From these analyses, experiment designers can then set conditions for actual experiments, as shown by the shaded region.

Red Teams Can Help Focus Joint Concept Development and Experimentation

- Contribute to a better understanding of the uncertainties in the strategic context

- Complement the intelligence community focus on evidentiary threat by identifying adaptive and technically feasible threats

- What the concept developers can't be relied on to do: Identify vulnerabilities and risky aspects of new concepts

- Portray a thinking opponent during human-in-the-loop simulations and joint experiments that test new concepts
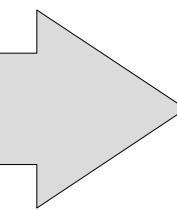
To serve future joint force commanders by making emerging concepts much more robust

Red Teams can help define the strategic context for future military capabilities by identifying asymmetric ways that future adversaries might oppose or counter US military forces. By focusing on the adaptive and technically feasible threats, Red Teams can aid in concept development. During experiments, they can help discover vulnerabilities and risky aspects of new concepts, pushing them to become more robust. Effective red teaming could also enable joint experiments to zero in on the doctrine, or-

ganization, training, materiel, leadership, personnel, and facilities (DOTMLPF) facets of the transformation process.

Beyond these specific contributions, instituting robust red teaming will, over time, serve a major customer of experimentation—future joint force commanders—by promoting a culture for more adaptive and agile military operations.

Overview

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- Spectrum of Red Teams and what they do
- **Challenges and attributes of a "World Class" Red Team**
- Issues and alternatives for establishing a Red Team
- Next step: Establish a prototype Red Team

The success of red teaming requires a delicate balance between the Red Team's independence from and interaction with Blue. Maintaining this balance requires careful management of the red teaming process.

Notwithstanding the potential benefits of Red Teams, their effective use will require the overcoming of a number of challenges. This section examines those challenges a World Class Red Team would face, and the attributes it might possess.

How Red Teaming Can Fail

- **Red becomes co-opted by Blue**
  - Is suborned to make Blue look good
- **Red marginalized by Blue**
  - Blue claims it has enough to do learning to crawl first
- **Red becomes a sideline critic — doesn't interact with Blue**
  - Adding more noise to an environment already filled with naysayers
- **Prejudging Blue Concepts as failure because of Red Challenges**
- **Red Team failed to reflect cultural bias of real adversaries**
- **Red Team quality insufficient to challenge Blue**
  - Preparation, quality, resources

A major challenge in red teaming is maintaining Red's independence from Blue. In a success-oriented culture, Red Teams are often viewed as useful only to the extent they prove the validity of Blue concepts. The BMDO Chop Shop, discussed earlier, produced a number of inexpensive, technically feasible counters to theater missile defense concepts. The Chop Shop was independent of the theater missile defense program office, reporting through BMDO's Threat Countermeasures Division. But over time, the funding of Chop Shop's countermeasure development dwindled as its results were perceived to threaten the theater missile defense program. Historically, some well-intentioned Red Team efforts eventually become co-opted by Blue unless senior management is committed to preserving Red's independence from Blue.

In concept development and experimentation, the necessary Red-Blue interaction might not occur if Blue claims it's not ready to take on serious challenges. Absent robust Red-Blue interaction, Red can become merely another sideline critic. In a culture impatient for results, pressure to constrain interaction for the sake of expedience often precludes testing Blue concepts to their failure point.

Prematurely judging concepts as failures is a continuing challenge. Effective Red-Blue interaction will produce setbacks for Blue, but these setbacks may also lead to real breakthroughs. The challenge is to allow the process to work without prejudging the outcomes. Creating a "safe" place for Red-Blue interaction means keeping the early results of concept development within the process, and involving senior authorities to adjudicate Red-Blue interaction.

The adaptive nature of adversaries is influenced by a variety of cultural, religious, and ethnic considerations. Failing to reflect those factors in red teaming risks understating the cultural asymmetries of future threats.

The quality of the Red Team, its preparation, and resources may be insufficient to challenge Blue. Competition for resources is a persistent challenge in the red teaming process. For this reason, the Red Team must be supported at a sufficiently high level to ensure its quality and continuity throughout concept development and experimentation. Thus effective red teaming requires involvement by senior leadership to provide the requisite levels of independence, interaction, and quality.

IDA JAWP	**What Makes a "World Class" Red Team**

- **Credibility with senior leadership**
  - **Confidence in the team's judgments**
- **Independence (but accountability)**
  - **Avoids being co-opted by Blue interests**
  - **Operates under "White Team" guidance to remain pertinent**
- **Involvement throughout concept development and experimentation process**
  - **Informs and influences planning and conduct of experiments**
  - **Iterative Red-Blue interaction promotes clearer thinking and more robust solutions**
- **High quality personnel**
  - **Experts in diverse fields**
  - **Innovative thinkers**

If Red Teams are to contribute to transformation, they must have credibility with senior leadership. Some previous attempts at red teaming fell short because senior leadership either did not have confidence in the Red Team's judgments or else was unwilling to implement changes implied from red teaming. Senior leadership must view Red Teams as a vital decision support tool.

Second, Red Teams need independence from Blue programs and concepts. They do not function well as a form of peer review occurring under program manager supervision. However, they should be accountable to senior levels above program management.

Third, a Red Team can contribute throughout the entire concept development and experimentation process. Isolating red teaming to some phases can leave critical assumptions unchallenged. The goal of transformation is to effect change; the goal of red teaming is to effect the "right" change. Without continuity of red teaming throughout the concept development and experimentation process, the right changes to DOTMLPF may not occur.

Finally, quality people are everything to effective red teaming. Selecting the right full-time members, as well as part-time augmentees, involves seeking out diverse subject matter expertise (from inside and outside the national security community) and truly innovative thinkers.

Overview

- Spectrum of Red Teams and what they do
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- **Issues and alternatives for establishing a Red Team**
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As suggested, a "World Class" Red Team could contribute to the transformation process, but effectively establishing it requires consideration of its purpose within the process. Just as operational concepts are considered in some strategic context, so the Red Team must be viewed in the context of a process that seeks to better understand future security challenges and the new means for dealing with them.

This section examines some issues that should be considered and offers alternative approaches for establishing a Red Team.

Issues for Establishing a Red Team

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- What should it do
- Who should own it
- Where to put it
- Organization and structure
- Composition

Addressing these issues helps define the role of a Red Team in developing new operational concepts and the experiments to test them.

What Should Red Teams Do?

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Blue Concept Developers: Learn and Adapt to Red Team Challenges

U.S. - Allied Forces Risking Life & Limb

Strategic Context, Visions, & Strategies

New Operational Concepts — Workshops, Wargames, Modeling & Simulation — Human-In-The-Loop Experiments: Virtual Environments — Field Experiments — Real-World Operations

Red Team: Challenge, React, Adapt

Real Adversaries
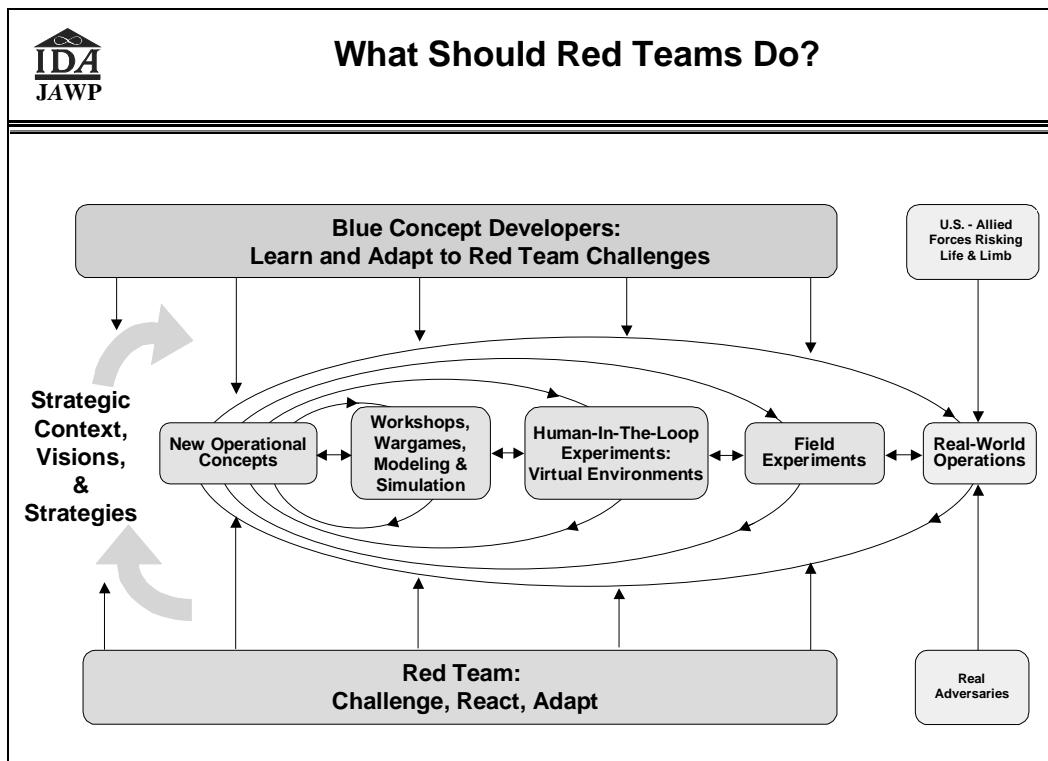
The Red Team should challenge Blue concept developers throughout the development process.

Beginning at the strategic level, red teaming might include informal discussions between policy staffs and a devil's advocate Red Team, postulating how future adversaries might challenge strategic-level guidance such as Joint Vision 2020 or the National Military Strategy. Red-Blue interaction at the interagency level could broaden the strategic context, enabling discovery of new operational concepts as well as non-military initiatives.

As operational concepts are conceived, worst case or regionally specific adversaries would challenge them in workshops and transparent war games (TWGs) in order to produce more robust concepts. TWGs are designed to facilitate iterative Red-Blue interaction, thereby strengthening Blue concepts in the face of potential Red counters. Once refined, key aspects of the new con-

cepts could then be challenged in HITL experiments, featuring fully adaptive opposing forces playing in virtual or field experiments. The results of these experiments could then be used to influence DOTMLPF issues, leading to next-generation military capabilities.

The two goals of this process are (1) more robust approaches to dealing with future security challenges, and (2) more agile future military forces. In support of the latter, red teaming enables an interactive "first battle" experience that strengthens operational concepts before they are tested in actual combat.

What Should Red Teams Do? (continued)

- Work with Intell, technical, and other communities to keep abreast of trends and possibilities

- Serve as a conduit to a broader range of participants with unique technical, regional, or operational expertise

- Devise possible strategies and warplans for potential future adversaries

- Devise counters (technical and operational) that future adversaries might use against concepts such as Rapid Decisive Operations

- Design and guide (and perhaps participate in) the OPFOR play in wargames and experiments (in both synthetic and field environments)

- Serve as the players in specially designed Red Team experiments

- Work with the Services to coordinate complementary Red Team activities across all Service and Joint experimentation

In preparing to participate in the process just described, the Red Team would first work closely with communities dedicated to understanding future trends and possibilities, thereby drawing on expertise needed to envision the future security environment. These activities would focus on possible strategies and counter-strategies that future adversaries might employ against the United States as well as potential conflict scenarios based on global trends.

Within the strategic aims of potential adversaries, the Red Team would devise strategies and counters, both technical and operational, that might be used to defeat or diminish concepts such as Rapid Decisive Operations. As concepts were refined, the Red Team would assist in designing experiments to test them, including participation in war games as well as the selection and preparation of opposing forces for specific experiments.

Beyond the Red Team's support for concept development and joint experimentation, it might also participate in specially designed technical experiments and complementary activities with other customers, such as the Services, joint commands, and their staffs.

Who Should Own It?

- **Alternatives**
  - **Joint Experimentation group at JFCOM (J-9)**
  - **CINCJFCOM**
  - **Organization external to JFCOM**
  - **External "Board of Directors" (Shared JFCOM/External membership)**
- **Issue: Independence vs. Interaction**
  - **Closeness to J-9 facilitates interaction with concept developers & experimenters**
  - **Organizational distance from JFCOM promotes independence**
  - **Attention by senior leadership could alleviate obstacles to interacting while preserving independence**

The issue of who should own the Red Team follows the previous discussion of what it should do.

In view of the Red Team's primary focus toward concept development and joint experimentation, its relationship to JFCOM is a primary consideration in examining ownership alternatives.

Under each alternative, the Red Team's independence from but interaction with Blue becomes the key issue. Placing the Red Team within the organization responsible for concept development and joint experimentation promotes greater interaction but could sacrifice independence. Ownership external to the organization would ensure greater independence but might also impair interaction.

Notwithstanding the tension between independence and interaction, senior leadership involvement in the red teaming process will be necessary to ensure the Red Team accomplishes its function.

- **Several Alternatives**
  - **Part of an existing staff**
  - **A new separate element within the owning organization**
  - **Within an existing DoD field activity (e.g., DTRA, DIA, NDU)**
  - **Part of an FFRDC**
  - **Contractor**
- **Process Issues**
  - **Responsiveness**
  - **Accessibility to other customers**
  - **Stimulations are exposed to other ideas/perspectives**
  - **Discreetness (e.g., plays within the process, not in the press)**
  - **Confidence of senior leadership**

The Red Team's location will influence its involvement with necessary partners and the red teaming process as well as the issue of independence and interaction previously discussed. Each of the five alternatives shown above could work, and each has pros and cons in terms of its ability to address the following process issues.

The Red Team must be responsive to its primary customers and accessible to other customers. Notwithstanding the growing reliance on distributive processes, effective red teaming will likely rely on personal interaction to define specific roles for the Red Team and the nature of its support to transformation process. For these reasons, it should be located in proximity to its sponsor and customer base in addition to developing effective distributed working relationships with other partners.

The Red Team needs to be exposed to a range of other ideas and perspectives. For this reason, its access to organizations within and external to the national security policy process is important. The Red Team should be positioned to stimulate the transformation environment at all levels—but to do so discreetly. To achieve this objective, red teaming must occur within the process and not in the press (i.e., the media). This requirement argues for a close connection between the Red Team and senior leadership responsible for transformation.

Given the range of issues affecting successful red teaming, and the need for senior leadership confidence, the best alternative will be one that maximizes hands-on involvement by senior authorities.

Organization and Structure

- **Organization Issues**
  - Quality of team members
  - Continuity of Red Team process/work tempo
  - Cost
- **Staff mix**
  - Full time
  - Part time
- **Source of staff/support:**
  - Military (Active/Reserve Component)
  - Government civilian
  - FFRDC
  - Consultants
  - Contractors

Red Team organization will be driven by a number of issues. Quality of people is key to producing a better understanding of future security challenges. Populating the Red Team with highly qualified subject matter experts and innovative thinkers needs to be a top priority.

Continuity of process is also an important consideration, especially in view of the changing tempo of Red Team activities. Finally, the cost of maintaining an independ-

ent Red Team should consider the needs of primary customers and the partnerships necessary for effective red teaming.

The staff mix should include both full-time and part-time members, drawing from different communities to give the Red Team the range of unique experience and perspectives needed to support the various phases of Red Team interaction in concept development and experimentation.

Red Team Composition

- **Core staff expertise**
  - If small, then mostly generalists
  - If larger, then some specialists (with no ties to concept/capability developers or program advocates)
- **Should include people knowledgeable about so-called asymmetric responses**
  - CC&D, WMD, IO, Special Operations
- **Augmenting expertise through partnering**
  - Short-term augmentees from government, academia, and industry
  - Long-term augmentees from the intelligence organizations, DoD agencies, R&D communities, and military staffs

The composition of the Red Team should include a full-time core staff of personnel who both understand the purpose and means for red teaming at various levels and who are capable of thinking about asymmetric responses. If small, this core group might be predominantly generalists in strategy and operational art. If larger, it might include some specialists, but in either case, the core staff should have no ties to the developers of concepts or capabilities or program advocates.

The Red Team needs people with diverse backgrounds such as cover, concealment and deception, weapons of mass destruction, information operations, and special operations. Part-time subject matter experts from a broad range of government, academic, and industry partnering organizations could be drawn in as needed to augment the Red Team. Expanding this base to eventually include foreign military representatives could bring a coalition perspective to strategy and concept development.

Depending on the work tempo, longer-term augmentation might be feasible from intelligence organizations, defense agencies, the research and development community, military staffs, and other federal agencies.

Overview

- Spectrum of Red Teams and what they do
- Challenges and attributes of a "World Class" Red Team
- Issues and alternatives for establishing a Red Team
- **Next step: Establish a prototype Red Team**

The potential value of red teaming in the transformation process warrants the early establishment of a prototype Red Team that can engage in the ongoing development of new concepts as well as the joint experiments to test them. The next slide presents a proposal for a pilot Red Team to support these and other aspects of the transformation process.

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Next Step: Establish a Prototype Red Team

- **Establish a small SECDEF/CJCS-endorsed Red Team for joint concept development, experimentation, & related transformation activities**
  - **Reporting to both CINCJFCOM and an OSD civilian of comparable rank**
  - **Using an existing Senior Review Board to review red teaming activities and report quarterly (e.g., to DEPSECDEF/VCJCS)**
- **Resource for 8-10 core personnel and long-term (1 year+) augmentees plus short-term augmentees**
- **Place it in OSD or with a Washington, DC, area contractor**

This proposed Red Team should have senior Office of the Secretary of Defense and Joint Staff endorsement as a DoD-level transformation tool. It would primarily support organizations engaged in operational concept development and joint experimentation (including, but not limited to, JFCOM). It would also interact with other customers supporting transformation-related activities.

The dual-reporting arrangement would facilitate both the level of independence and interaction needed to ensure its success while enabling a broader role for red teaming in related transformation activities. A Senior Review Board would oversee Red Team activities and periodically report to senior leadership.

The initial organization could consist of 8 to 10 full-time staff and an equal number of long-term augmentees. As the team engages in the red teaming process, it could be further augmented from a larger pool of subject matter experts and contractor support.

A prototype Red Team should be established in the Washington, DC, area as an element of the Office of the Secretary of Defense staff or as a contractor-operated organization. This location and organization will enable a workable balance between interaction and independence while ensuring the Red Team's access to key resources and senior leadership involvement.

Good Red Teaming Is Worth Doing

- **Red Teaming is an essential element in transforming US military capabilities**
  - **A world class boxer needs a capable sparring partner**
- **A Red Team can increase the robustness of new concepts by pitting Blue concepts against <u>thinking, adaptive</u> (albeit surrogate) adversaries**
- **Establish a prototype Red Team as a tool for reducing the risks of new operational concepts.**

Red Teams can challenge DoD thinking about the future. Joint experimentation is a means for learning about different approaches to future security challenges, but without accounting for thinking, adaptive adversaries, we are likely to miss the mark that transformation aims for.

Accordingly, senior DoD leadership should consider establishing a prototype Red Team as a management tool to improve the robustness of future operational concepts and to reduce the risks associated with the transformation process.

Acronyms and Abbreviations

AD	air defense
BMDO CHOP	Ballistic Missile Defense Organization Countermeasures Hands-On Program; also called the Chop Shop
C2	command and control
CC&D	camouflage, concealment, and deception
CINCJFCOM	Commander in Chief Joint Forces Command
CJCS	Chairman, Joint Chiefs of Staff
DEPSECDEV	Deputy Secretary of Defense
DIA	Defense Information Agency
DoD	Department of Defense
DOTMLPF	doctrine, organization, training, materiel, leadership, personnel, and facilities
DTRA	Defense Threat Reduction Agency
FFRDC	Federally Funded Research and Development Center
HITL	human in the loop
ICBM	intercontinental ballistic missile
IDA	Institute for Defense Analyses
IO	information operations
IRBM	intermediate-range ballistic missile
JAWP	Joint Advanced Warfighting Program
JFCOM	Joint Forces Command
MEL	Mobile-erector-launcher
NDU	National Defense University
OPFOR	opposing forces
OSD	Office of the Secretary of Defense
R&D	research and development
SRBM	short-range ballistic missile
TBM	theater ballistic missile
TEL	transporter-erector-launcher
TWG	transparent war game
US	United States
VCJCS	Vice-Chairman, Joint Chiefs of Staff
WMD	weapons of mass destruction

Notes

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13. ABSTRACT (Maximum 200 words)

Since the end of the Cold War, the United States has recognized the need to transform its military forces to meet future security challenges. Joint experimentation is the preferred means for exploring and testing innovative new concepts and capabilities. But without a thinking, adaptive adversary, there is a small chance of hitting the mark that transformation aims for. A strong and independent Red Team can examine both strengths and weaknesses of new concepts before next-generation capabilities are developed and fielded. This annotated briefing is based on experiences gained by a JAWP team while conducting Joint Experiment J9901, Attack Operations Against Critical Mobile Targets, on behalf of the USJFCOM. It first examines the spectrum of Red Teams and how different forms of red teaming contribute to the transformation process. Next, it considers the challenges that face effective red teaming and some desirable attributes a "World Class" Red Team might possess. The briefing then looks more closely at the issues surrounding the establishment of a Red Team and a range of alternatives for setting up a Red Team. Finally, it proposes a concept for establishing a prototype Red Team. The potential value of red teaming in the transformation process warrants the early establishment of a prototype Red Team that can engage in ongoing development of new concepts and the joint experiments to test those concepts. The remainder of the brief discusses a proposal for a pilot Red Team to support these and other aspects of the transformation process.

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